Review of: "The Spherical Horse and COVID-19"

Marco Roccetti[1]

1 University of Bologna

I agree with the author of this short article. He is not alone in his criticism to the compartmental approach to model COVID-19 spread, if the compartments are rigid.

The motivation of this inability has roots in the fact that one thing we know about Covid is that many of the factors that characterize this disease present a high variance. Owing to this, approximating the dimensions of a compartment (i.e a box) just with the averages (mean values) may bring to misleading results. My personal opinion is that no COVID model will work well if it is not thought of as able to manage the variance.

Nonetheless, to replace SIRD model or similars we should be able to provide better models.

My group of research has contributed to this aim with different proposals, among which at least the following [1,2]. Some of them have reached the point to use DL. Another prominent proposal is that described in [3]. Unfortunately, not different from the author, also our proposals have beed considered with no great enthusiasm by the scientific community (biostatistics and medicine in particular) because they are not inclined to consider innovative approaches against those they use since dissensò of year. I can understand some of their reasons, yet without the risk of innovation no new discovery will ever emerge.

1 Casini and Roccetti. **A Cross-Regional Analysis of the COVID-19 Spread during the 2020 Italian Vacation Period: Results from Three Computational Models Are Compared. Sensors 2020, 20(24).** **https://doi.org/10.3390/s20247319**

2 Casini and Roccetti. Reopening Italy's schools in September 2020: a Bayesian estimation of the change in the growth rate of new SARS-CoV-2 cases. BMJ Open 2021, 11(7). 10.1136/bmjopen-2021-051458

3 Gaspari. **The impact of test positivity on surveillance with asymptomatic carriers, Epidemiologic** **Methods, 2023.** **https://doi.org/10.1515/em-2022-0125**